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NRO REVIEW COMPLETED

QUARTERLY PROGRESS REPORT

SATELLITE SYSTEMS

1 July 1968 through 30 September 1968

I. CORONA PROGRAM

A. J-1 System Status

1. J-49 Summary

On 18 September 1968 J-49 (Mission 1048) was successfully launched. This was the first J-1 system to use the 3/4 speed timer with a planned orbit life of 16 days. All systems functioned normally until rev 175; at that time a T/M commutator supplying the major portion of the diagnostic data from the payload ceased to function. On rev 182 (approximately 30% into "B" bucket) the forward-looking instrument failed; an exhaustive investigation of the failure is under way. The aft-looking instrument functioned normally throughout the mission.

2. The CORONA Resident Office plans to use SO-230 film in future J-1 missions. The increased speed of SO-230 over 3404 will permit the use of smaller slits and thus reduce smear.

Mission 1102 (CR-2) used tag ends of SO-230 in both cameras (2000' in one and 2500' in the other). The SO-230 has a grainier appearance than 3404, but close examination shows no degradation of image quality (Itek Report No. BOS-COR-9624-68-70, Evaluation of SO-230 Film for Use with the CORONA System, dated 25 June 1968, contains a detailed analysis). Mission 1046 (J-48) used a full load of SO-230. An out-of-focus condition developed which grew in intensity throughout the mission; the PET report concluded that the cause was emulsion buildup on the rails.

Eastman Kodak and Itek conducted studies to determine if SO-230 was the cause of the anomaly. Eastman Kodak reported that they were unable to

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differentiate between the surface or dusting characteristics of SO-230 and other high definition aerial films.

J-50 successfully completed HIVOS testing with a full load of SO-230; no film problems were noted. J-43 will use a full load of SO-230 during its HIVOS test and will be carefully examined for dusting; however, no Dr. "A" chamber run is scheduled. If no abnormal dusting is noted at the conclusion of the J-43 HIVOS test, the Resident Office will fly SO-230 in Mission 1049 (J-50) in early 1969.

B. J-3 System Status

1. CR-4 Summary

During the period of 7 through 21 August, CR-4 (Mission 1104) was successfully launched, operated, and recovered.

a. The forward-looking instrument used the first third generation lens, producing a maximum ground resolution of 5 feet along track, 8 feet across track, and an MIP of 115 for the mission. This system produced the best photography achieved to date in the CORONA Program.

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c. FILTERS - Wratten 25, 21, 15 +ND and the SF05 filters were used in the system. The SF05 used during Mission 1104 was noted before the Mission as being of inferior quality. Therefore, only one operation of denied area photography was taken. The photo interpreters reported that the image quality of that portion of the film exposed through the SF05 was poor.

d. Pressure Makeup Unit (PMU) - The CR-4 PMU malfunctioned because of a leaky regulator that permitted excessive gas depletion at random times throughout the Mission.

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2. Special Tests

CR-5 was tested in HIVOS using the Aschenbrenner Grid Test equipment (otherwise known as an AGT or Dr. "A" test). This checked for film flatness during camera operation and at altitude conditions. The results of this test confirmed that CR-5 was properly focused and that the UTB in CR-5 was within film flatness specifications.

3. Proposals and Future Changes

a. Glass Filters - CR-14 and up will use glass filters. (Glass filters will provide more uniform and predictable results).

b. Film

(1) SO-205: The CORONA Resident Office plans to use SO-205 film for systems [redacted] SO-205 is an SO-230 type emulsion on an ultra thin base film.

(2) SO-121: Five hundred feet of SO-121 will fly in the aft-looking camera of CR-5. The aft-looking camera was selected because [redacted] (2nd generation) is more compatible with SO-121 than the forward-looking (3rd generation lens); also the aft-looking camera angle (with the sun rather than into the sun) is preferable

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photographically. The theoretical resolving power is approximately 1/4 of 3404 and has an aerial exposure index of 12 (compared to 2.4 for 3404). The greatest reduction in resolution

[redacted] Eastman Kodak is developing a method [redacted] and processing which would produce approximately a 20% increase in resolving power of SO-121. Operationally the resolving power of SO-121 should be approximately 60 lines/mm. Using Kodak's new technique, resolutions of 70 to 80 lines/mm can be achieved.

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C. Deliveries To A/P

1. Instrument Deliveries

Nos. 316/317 - September 1968
" 318/319 - September 1968

2. SRV Deliveries

737	738	July 1968
810	820	August 1968
817	818	September 1968

D. Missions Completed During This Quarter

Mission No.	1104	1048
Booster No.	515	524
Agenda No.	1644	1647
Payload No.	CR-4	J-49
Instrument No.	308/309	222/223
SI No.	--	D116/121
DISIC No.	S/N-7	--

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D. Missions Completed During This Quarter

DRCG No.	618	605
Flight Date	7 August 1968	18 September 1968
Feet Payload Flown	31787	32000
Feet Payload Recovered	31787	27337
Recovery Dates	14, 22 August 1968	27 September 1968 - 2 October 1968

E. Missions Planned For Next Quarter

Date	30 October 1968	11 December 1968
Mission	1105	1106
Payload	CR-5	CR-6

F. Meetings and Briefings

1. PET Meeting for Mission 1047 was held at NPIC on 23 and 24 July 1968.

2. PET Meeting for Mission 1104 was held at NPIC on 10 and 11 September 1968.

3. CORONA Photographic Experiments Evaluation Committee (Ad Hoc Committee) met on 13 September 1968 at NPIC. The following topics were discussed at the meeting:

a. Review of SO-380 analysis.

b. [REDACTED]

c. Planning for SO-121 on CR-5.

d. [REDACTED]

4. Program Managers' Meeting was held at A/P on 6 August 1968. The following topics were discussed:

a. Preliminary 369-1971 flight schedule.

b. Cam and filter delivery schedules for future J-3 missions.

c. AO filters and aperture changes.

d. Glass filters.

e. Focus optimization.

f. Power supply distortion.

g. HIVOS temperature control.

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